CLAIMS

I/We Claim:

1. A crop rake system for controlling the depth at which tines on a wheel rake may penetrate a ground surface while raking a crop, comprising:
a rotatable rotation framework with an axis of rotation;
a plurality of tines mounted to the rotation framework radially outward from the axis of rotation of the rotation framework; and
a plurality of tine dampeners mounted to the rotation framework radially outward from the axis of rotation of the rotation framework, the plurality tine dampeners being mounted relative to the plurality of tines such as to determine the depth at which the plurality of tines may penetrate into a ground surface.

2. The crop rake system as recited in claim 1, and further wherein the rotatable rotation framework is a wheel shaped rotation framework.

3. The crop rake system as recited in claim 1, and further wherein the plurality of tines are adjustably mounted to the rotation framework such that the tines can be moved radially away from the axis of rotation of the rotation framework.

4. The crop rake system as recited in claim 1, and further wherein the plurality of tine dampeners are flexible loops mounted to the rotation framework adjacent the plurality of tines.

5. The crop rake system as recited in claim 1, and further wherein the rotation framework is movably mounted to a rake system framework.

6. The crop rake system as recited in claim 1, and further wherein the rotation framework is bias suspended from a rake system framework.

7. A crop wheel rake system for controlling the depth at which tines on a wheel rake may penetrate a ground surface while raking a crop, the rake system comprising:

a wheel framework configured to be rotatably mounted about an axis of rotation;

a plurality of tines mounted to the rotation framework radially outward from the axis of rotation of the rotation framework; and

at least one tine dampener mounted to the wheel framework radially outward from the axis of rotation, the at least one tine dampener being mounted relative to the plurality of tines such as to control the depth at which the plurality of tines may penetrate into a ground surface.

8. The crop rake system as recited in claim 7, and further wherein the at least one tine dampener is a dampening tube mounted in a position adjacent the plurality of tines.

9. The crop rake system as recited in claim 7, and further wherein the damping tube is an inner tube.

10. The crop rake system as recited in claim 7, and further wherein the damping tube is a tire.

11. The crop rake system as recited in claim 7, and further wherein the at least one tine dampener is a plurality of semi-flexible loops mounted radially outward to the wheel framework and adjacent the plurality of tines.

12. The crop rake system as recited in claim 11, and further wherein the plurality of semi-flexible loops mounted radially outward to the wheel framework are comprised of ultra-high molecular weight (UHMW) polyethylene plastic.

13. The crop rake system as recited in claim 7, and further wherein the plurality of tines are adjustably mounted to the rotation framework such that the tines can be adjustably attached radially away from the axis of rotation of the rotation framework.

14. The crop rake system as recited in claim 7, and further wherein the rotation framework is movably mounted to a rake system framework.

15. The crop rake system as recited in claim 7, and further wherein the rotation framework is bias suspended from a rake system framework.

16. A pull type crop rake system comprising:

a rake system framework comprises of:

a central base framework with a pull vehicle coupling;

a first extension arm pivotally mounted to a first side of the central base framework, with a first wheel set mounted to and supporting the first extension arm;

a second extension arm pivotally mounted to a second side of the central base framework, with a second wheel set mounted to and supporting the second extension arm;

a first rake mount structure pivotally mounted to the first extension arm;

a second rake mount structure pivotally mounted to the second extension arm;

a first plurality of crop rakes pivotally mounted to the first rake mount structure;

a second plurality of crop rakes pivotally mounted to the second rake mount structure; and wherein the rake system framework has a rake position wherein:

the first extension arm and the second extension arm are in an outward position;

the first rake mount structure is mounted relative to the first extension arm in a desired raking position, and the second rake mount structure is mounted relative to the second extension arm in a desired raking position;

and further wherein the rake system framework has a transport position wherein:

the first extension arm and the second extension arm are retracted to a position approximately parallel to a direction of travel of the rake system; and

the first rake mount structure and the second rake mount structure are retained between the first extension arm and the second extension arm.

17. A pull type crop rake system as recited in claim 16, and further wherein the first plurality of crop rakes is comprised of:

a rotatable rotation framework with an axis of rotation;

a plurality of tines mounted to the rotation framework radially outward from the axis of rotation of the rotation framework; and

a plurality of tine dampeners mounted to the rotation framework radially outward from the axis of rotation of the rotation framework, the plurality tine dampeners being mounted relative to the plurality of tines such as to determinethe depth at which the plurality of tines may penetrate into a ground surface.

18. A pull type crop rake system as recited in claim 16, and further wherein the rotatable rotation framework is a wheel shaped rotation framework.

19. A pull type crop rake system as recited in claim 16, and further wherein the plurality of tines are adjustably mounted to the rotation framework such that the tines can be moved radially away from the axis of rotation of the rotation framework.

20. A pull type crop rake system as recited in claim 16, and further wherein the plurality of tine dampeners are flexible loops mounted to the rotation framework adjacent the plurality of tines.

21. A pull type crop rake system as recited in claim 16, and further wherein the rotation framework is movably mounted to a rake system framework.

22. A pull type crop rake system as recited in claim 21, and further wherein the rotation framework is bias suspended from a rake system framework.

23. A pull type crop rake system as recited in claim 16, and further wherein the rake wheel system in the transport position has an overall width of approximately eight and one-half feet or less.

24. A pull type crop rake system as recited in claim 17, and further wherein the rake system framework further comprises:

a first movement arm pivotally mounted to the central base framework and to the first extension arm, and further movably mounted to the central base framework such that the movement of the first movement arm relative to the central base framework moves the first extension arm relative to a centerline to a direction of travel; and

a second movement arm pivotally mounted to the central base framework and to the second extension arm, and further movably mounted to the central base framework such that the movement of the second movement arm relative to the central base framework moves the second extension arm relative to the centerline to the direction of travel.

25. A pull type crop rake system as recited in claim 24, and further wherein the first movement arm and the second movement arm are moved relative to the central base framework by a hydraulic cylinder.

26. A crop wheel rake system for controlling the depth at which tines on a wheel rake may penetrate a ground surface while raking a crop, the rake system comprising:

a wheel framework configured to be rotatably mounted about an axis of rotation;

at least one tine means mounted to the rotation framework radially outward from the axis of rotation of the rotation framework; and

at least one tine dampener means mounted to the wheel framework radially outward from the axis of rotation, the at least one tine dampener means being mounted relative to the plurality of tine means such as to control the depth at which the at least one tine means may penetrate into a ground surface.